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Mathematical knowledge management: Ontological models and digital technology

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Abstract

This paper is discussed basic ideas, approaches and the results obtained in the research project the objective of which is to develop mathematical knowledge management technologies based on ontologies. We are developing the digital ecosystem OntoMath for mathematical knowledge management, which includes a set of specialized ontologies, text analytics tools and applications for managing mathematical knowledge. The results obtained are close to main problems declared in the World Digital Math Library (WDML) project. The main purpose of WDML is to build a global system of linked repositories for saving all digital mathematical documents, including contemporary and historic sources. This paper is devoted to decisions of some problems in this global initiative. In particular, we developed the program services for processing large collections of mathematical papers.